

## CLAIMS

1. A film image input system for reproducing on a video monitor an image of a long and narrow still photo film developed, said system using a film cartridge including a main body for storing said film therein and having an outlet opening to send out said film in the longitudinal direction thereof, a single spool for fixing one end of said film in the longitudinal direction thereof and allowing winding of the whole length of said film thereround, and support means for supporting said spool in such a manner that said spool can be rotated in both directions, said system comprising film supply means engageable with at least one of the upper and lower ends of said spool of said film cartridge to rotationally drive said spool in a direction to send out said film from said cartridge main body and in a direction to rewind said film back into said cartridge main body.

2. A film image input system as set forth in Claim 1, further including film take-up means, simultaneously when said film is sent out from said film cartridge by said film supply means, engageable with the opposite end of the film to the end thereof fixed to said spool to take up said film, and a pair of picture frame forming means respectively having an opening of a size corresponding almost to one frame of said film between said film supply and take-up means, and respectively disposed opposed to the respective

front and back surfaces of said film.

3. A film image input system as set forth in Claim 2, wherein, in synchronization with the movements of said film supply and take-up means, said pair of picture frame forming means cooperate together to press against said film and to keep the image recording surface of said film at the focusing surface of an image pickup optical system when both of said film supply and take-up means are stopped to drive, and said pair of picture frame forming means release said film when at least one of said film supply and take-up means is driving.

4. A film image input system as set forth in Claim 2, wherein said film supply means includes means, when said film take-up means is driving in a direction to take up a film, for applying to said film a tension in the opposite direction to the film moving direction, and wherein said film take-up means includes means, when said supply means is driving in a direction to rewind said film, for applying a tension in the opposite direction to the film moving direction.

5. A film image input system for reproducing on a video monitor an image of a long and narrow still photo film developed, said system using a film cartridge including a main body for storing said film therein and having an outlet opening to send out said film in the longitudinal direction thereof, a single spool for fixing one end of said film in the longitudinal direction thereof

and allowing winding of the whole length of said film thereround, and support means for supporting said spool in such a manner that said spool can be rotated in both directions, said system comprising a cartridge storage part for mounting said film cartridge into said film feeding means for feeding said film within said film cartridge, said cartridge storage part having a cartridge storage opening which is formed so as to substantially correspond to the shape of said film cartridge.

6. A film image input system for reproducing on a video monitor an image of a long and narrow still photo film developed, said system using a film cartridge for storing said film therein, said system comprising means for starting the feeding of said film in synchronization when said film cartridge is loaded into a cartridge storage opening formed in film feeding means for feeding said film and said cartridge storage opening is closed.

7. A film image input system as set forth in Claim 2, further including means for detecting that said film is interposed between said film supply means and said take-up means, and means, when said film is not detected after detected once, for displaying after a short time that said film cartridge can be discharged and also for enabling said film cartridge to be discharged.

8. A film image input system for reproducing on a video monitor an image of a long and narrow still photo film developed, said system using said film coated with a

magnetic recording layer and having information magnetically recorded by a camera, and a film cartridge for storing said film therein and having an outlet opening for sending out said film in the longitudinal direction thereof and a single spool for said film to be wound thereround, wherein a magnetic head contactable with said magnetic recording layer is disposed adjacent to said film outlet opening in said film cartridge.

9. A film image input system for reproducing on a video monitor an image of a long and narrow still photo film developed, said system using said film coated with a magnetic recording layer and having information magnetically recorded by a camera, said system comprising means for discriminating a photograph starting frame from said magnetically recorded information, and means for sending out said film up to said photograph starting frame without reproducing the images of said film.

10. A film image input system for picking up an image of a negative film or a positive film by use of image pickup means and converting said image into an electric signal and for outputting said electric signal to a video monitor to thereby reproduce said film image on the screen of said video monitor, wherein said negative or positive film is stored in a rolled manner in a film cartridge having a single shaft and said film cartridge is stored in a cartridge storage part having a film winding and rewinding mechanism to thereby drive said film.

11. A film image input system as set forth in Claim 10, wherein in the respective front and rear portions of said film where no image is present, there are formed holes or notches respectively capable of discriminating said front and rear portions and there is formed in each of the frames of said film a hole or a notch used to indicate the position of said each frame, and wherein said film image input system further includes frame number detect means for optically detecting said hole or notch of said film and calculate the number of said frame detected.

12. A film image input system as set forth in Claim 10, further including:

a zoom and scan mechanism for changing the reproduced state of said film image in accordance with zoom information and scan information;

information recording/reproducing means for recording and reproducing film information such as zoom information, scan information by frames and the like into and from a magnetic layer coated on said film, or an IC memory mounted in said film cartridge or an IC memory contained within said film image input system; and,

control means for controlling said zoom and scan mechanism in accordance with said film information read out by said information recording/reproducing means.

13. A film image input system as set forth in Claim 12, wherein said film information includes voice information, and wherein said control means, on inputting

said voice information from said information recording/reproducing means, allows said video monitor to display on the screen thereof a display that said voice information is input when the frame is reproduced, and also said control means, when an operation of outputting a voice is executed, allows said video monitor to output a voice signal corresponding to said voice information.

14. A film image input system as set forth in Claim 12, wherein said film information includes pre-wind information indicating that said film has been previously wound and then the photographing has been started, and wherein said control means, on inputting said pre-wind information from said information recording/reproducing means, pre-winds said film within said film cartridge before the frame is fed in the forward direction.

15. A film image input system as set forth in Claim 12, wherein said information recording/reproducing means records a frame to be re-printed, the number of prints of said frame, and zooming and trimming information.

16. A film image input system as set forth in Claim 12, wherein said information recording/reproducing means records zoom information for reprinting in such a manner that said zoom information is restricted so as not to exceed 3 times.

17. A film image input system as set forth in Claim 12, further including a remotely-controlled device for selecting input and erasure of film information and/or

print information by means of said information recording/reproducing means, an automatically reproducing mode in which reproduction is executed in accordance with said film information, and a manually reproducing mode in which reproduction is executed irrespective of said film information.

18. A film image input system as set forth in Claim 10, wherein said film image input system further includes a frame memory for storing image data of 1 frame or image data of a plurality of frames combined together in accordance with said electric signal, and wherein an image display or a multi-image display in the film feeding can be executed in accordance with said image data from said frame memory.

19. A film image input system as set forth in Claim 12, wherein said information recording/reproducing means, in photographing by a camera, reads the photographing information representing photographing conditions recorded in the magnetic layer coated on to said film or an IC memory mounted into said film cartridge or a filmphoto-sensitive layer, and said control means superimposes a display showing the photographing conditions on the screen of said video monitor in accordance with the photographing information read by said information recording/reproducing means.

20. A film image input system as set forth in Claim 12, wherein said film information includes pseudo zoom information and said control means, when reproducing in a

standard state a frame in which said pseudo zoom information is recorded, allows said frame to be reproduced at a zoom magnification corresponding to said pseudo zoom information.

21. A film image input system for picking up the image of a negative film or a positive film by use of image pickup means, converting the image into an electric signal, and outputting the electric signal to a video monitor to thereby reproduce the film image on the screen of the video monitor, said system using said film having a magnetic recording layer coated thereon, said system comprising magnetic heads respectively disposed on the entrance and outlet sides of an image pickup area of said film to be contactable with said magnetic recording layer of said film, wherein, when feeding the frame of said film, said magnetic head disposed on said entrance side reads out information on a frame entering said image pickup area from said magnetic recording layer at the upper or lower end of said frame, and said magnetic head on said outlet side writes information into said magnetic recording layer at the upper or lower end of a frame leaving said image pickup area.

22. A film image input system as set forth in Claim 21, wherein said magnetic heads are respectively recording/reproducing heads and thus can serve as a recording head or a reproducing head according to the directions of feeding of said film.



23. A film image input system, comprising:

film feeding means for feeding a long and narrow still photo film developed;

image pickup means for picking up an image on said film, converting said image into an electric signal, and outputting said electric signal to a video monitor; and,

film guide members respectively disposed on the entrance and outlet sides of an image pickup area to be image picked up by said image pickup means for guiding said film to be fed by said film feeding means by curving the same film in an S-shaped or in a Z-shaped manner.

24. A film image input system, comprising:

film feeding means for feeding a long and narrow still photo film developed;

image pickup means for picking up an image on said film, converting said image into an electric signal, and outputting said electric signal to a video monitor; and,

a guide roller for guiding said film to be fed by said film feeding means, said roller being contactable at least with the film image surface of said film to be rotated with the movement of said film.

25. A film image input system, comprising:

a supply reel being loaded a spool within a film cartridge, with a long and narrow, developed still photo film wound round said spool;

a take-up reel having a take-up shaft;

reel drive means for driving said supply and

take-up reels;

film guide means including a film storage part for enclosing said take-up shaft of said take-up reel, said film guide means guiding said film to be fed between said film cartridge with said spool thereof loaded into said supply reel and said take-up shaft;

image pickup means for picking up an image on said film guided by said film guide means between said supply and take-up reels, converting said image into an electric signal, and outputting said electric signal to a video monitor; and,

a guide member disposed extending from the film entrance and outlet opening of said film storage part toward said take-up shaft of said take-up reel, for guiding the leading end of said film to the take-up side of said take-up shaft when said film is sent out from said film cartridge, said guide member being retreatable when it contacts with the outer-most roll of said film wound round said take-up shaft.

26. A film image input system as set forth in Claim 25, wherein said guide member is formed of a material which is flexible and softer than said film.

27. A film image input system as set forth in Claim 25, wherein said guide member is a guide arm which is disposed to be freely rotatable and has a roller at the leading end thereof.

28. A film image input system, comprising:

a supply reel and a take-up reel for feeding a long and narrow still photo film developed;

reel drive means for driving said supply and take-up reels;

image pickup means for picking up an image on said film to be fed between said supply and take-up reels, converting said image into an electric signal, and outputting said electric signal to a video monitor;

first reel brake means for applying brake on to said supply reel;

second reel brake means for applying brake on to said take-up reel; and,

control means for controlling said first and second reel brake means in such a manner that brake is always applied to said supply and take-up reels while said film is being loaded between said supply and take-up reels.

29. A film image input system as set forth in Claim 28, wherein said first reel brake means apply soft brake and full brake to said supply reel and said second reel brake means apply soft brake and full brake to said take-up reel, and wherein said control means controls said first and second reel brake means in such a manner that they apply soft brake to said supply and take-up reels when said film is fed and that they apply full brake to said supply and take-up reels when said film is fed while said film is being loaded between said supply and take-up reels.

30. A film image input system, comprising:

a supply reel and a take-up reel;

a cartridge holder for storing a film cartridge having a spool with a long and narrow, developed still photo film wound thereround, said cartridge holder including hold means for holding said film cartridge in such a manner that said film cartridge is floated a given amount in the axial direction of said spool, said cartridge holder, when opened, allowing said film cartridge to be inserted thereinto or taken out therefrom from the axial direction of said spool and, when closed, allowing said spool of said film cartridge to be positioned on said supply reel;

reel drive means <sup>0</sup>for driving said supply and take-up reels;

image pickup means for picking up an image on said film to be fed between said supply and take-up reels, converting said image into an image signal, and outputting said image signal to a video monitor;

hold means including a rotatable spool hold member, said hold means holding said spool hold member in such a manner that it is free to advance or retreat with respect to said supply reel; and,

drive means for driving said hold means to advance or retreat said spool hold member with respect to said supply reel, said drive means driving said spool hold member to push said film cartridge in said cartridge holder toward said supply reel, thereby loading the lower end

portion of said spool into the head portion of said supply reel and loading said spool hold member into the upper end portion of said spool.

31. A film image input system, comprising:

a supply reel and a take-up reel;

a cartridge holder for storing a film cartridge having two spools with a long and narrow, developed still photo film wound thereround, said cartridge holder including hold means for holding said film cartridge in such a manner that it is floated a given amount in the axial direction of said spools, said cartridge holder, when opened, allowing said film cartridge to be inserted thereinto or taken out therefrom from the axial direction of said spools and, when closed, allowing said two spools of said film cartridge to be positioned respectively on said supply and take-up reels, drive means for driving said supply and take-up reels;

image pickup means for picking up an image on said film to be fed between said supply and take-up reels, converting said image into an image signal, and outputting said image signal to a video monitor;

hold means including two rotatable spool hold members, said hold means holding said two rotatable spool hold members in such manner that they are free to advance and retreat with respect to said supply and take-up reels; and,

drive means for driving said hold means to

advance and retreat said two spool hold members with respect to said supply and take-up reels, said drive means driving said two spool hold members to push said film cartridge within said cartridge holder toward said supply and take-up reels, thereby loading the lower end portions of said two spools respectively into the head portions of said supply and take-up reels and loading said two spool hold members into the upper end portions of said two spools.

32. A film image input system, comprising:

frame detect means for detecting a notch, a hole or the like formed in each of frames of a long and narrow, developed still photo film and indicating the position of each frame to thereby detect the frame;

film feeding means for feeding the frames by feeding said film until said frame detect means detects the next frame and, after said frame feeding, for scanning the frames in a film feeding direction by feeding said film in a given scan range narrower than the width of 1 frame;

image pickup means for picking up an image on said film, converting said image into an image signal, and outputting said image signal to a video monitor;

scan position detect means for detecting a scan position after the frame feeding with a frame detect position as a reference position; and,

control means for enabling the next frame to be detected by said frame detect means after a scan position detected by said scan position detect means in the frame

feeding exceeds at least said scan range.

33. A film image input system, comprising:

frame detect means for detecting a notch, a hole or the like formed in each of frames of a long and narrow, developed still photo film and indicating the position of each frame to thereby detect the frame;

film feeding means for feeding the frames by feeding said film until said frame detect means detects the next frame and, after said frame feeding, for scanning the frames in a film feeding direction by feeding said film in a given scan range;

image pickup means for picking up an image on said film, converting said image into an image signal, and outputting said image signal to a video monitor;

scan position detect means for detecting a scan position after the frame feeding with a frame detect position as a reference position; and,

control means, when said film is moved to a position existing forwardly of a frame detect position and the frame is fed in a reverse direction, and when said film is moved to a position existing reversely of the frame detect position and the frame is fed in a forward direction, for enabling the frame detection by said frame detect means after the detect position of said scan position detect means coincides with said reference position.

34. A film image input system, comprising:

frame detect means for detecting a notch, a hole

or the like formed in each of frames of a long and narrow, developed still photo film and indicating the position of each frame to thereby detect the frame;

film feeding means for feeding the frames by feeding said film until said frame detect means detects the next frame and, after said frame feeding, for scanning the frames in a film feeding direction by feeding said film in a given scan range;

image pickup means for picking up an image on said film, converting said image into an image signal, and outputting said image signal to a video monitor;

means for deciding whether said film is moved to a position forwardly of a frame detect position or to a position reversely of the frame detect position by scanning; and,

control means, when said film is moved to a position forwardly of the frame detect position and the frame is fed in a reverse direction, and when said film is moved to a position reversely of the frame detect position and the frame is fed in a forward direction, for disabling the first frame detect by said frame detect means.

35. A film image input system, comprising:

a reel motor arranged in such a manner that it is reversely rotatable and the speed of rotation thereof can be changed according to voltages input;

a supply reel and a take-up reel;

a first oscillating gear mechanism rotatable



according to the direction of rotation of said reel motor to transmit the motor rotary drive force to said supply reel or take-up reel;

a second oscillating gear mechanism rotatable according to the direction of rotation of said reel motor to transmit the rotary drive force to said supply or take-up reel at a different ratio of reduction from that of said first oscillating gear mechanism;

restrict means for restricting the rotation range of one of said first and second oscillating gear mechanisms and enabling only the other oscillating gear mechanism to transmit the rotary drive force; and,

image pickup means for picking up an image on a long and narrow, developed still photo film to be fed between said supply and take-up reels, converting said image into an image signal, and outputting said image signal to a video monitor.

36. A film image input system, comprising:

a reel motor arranged in such a manner that it is reversely rotatable and the speed of rotation thereof can be changed according to voltages input;

a supply reel being loaded a spool within a film cartridge, with a long and narrow, developed still photo film wound round said spool;

a take-up reel for taking up said film sent out from said film cartridge;

an oscillating gear mechanism rotatable according

to the direction of rotation of said reel motor to transmit the motor rotary drive force to said supply or take-up reel,

means for fixing said oscillating gear mechanism unrotatable in such a manner that the rotary drive force can be transmitted through said oscillating gear mechanism to said supply reel and for enabling said supply reel to be driven in a direction to send out said film from said film cartridge; and,

image pickup means for picking up an image on said long and narrow, developed still photo film to be fed between said supply and take-up reels, converting said image into an image signal, and outputting said image signal to a video monitor.

37. A film image input system, comprising:

film feeding means for feeding a long and narrow still photo film developed;

image pickup means for picking up an image on said film, converting said image into an image signal, and outputting said image signal;

a set image memory for storing an image signal of a set image different from said film image;

film detect means for detecting whether said film is set in an image pickup area to be image picked up by said image pickup means; and,

image signal switching means, when said film is detected by said film detect means, for outputting an image signal of the film image picked up by said image pickup

means and, when said film is not detected, for outputting said image signal stored in said set image memory.

38. A film image input system, comprising:

film feeding means for feeding a long and narrow still photo film developed;

image pickup means for picking up an image on said film, converting said image into an image signal, and outputting said image signal;

negative/positive decision means for deciding whether said film is a negative film or a positive film; and

image signal process means for performing a negative image processing or a positive image processing on said image signal in accordance with the results decided by said negative/positive decision means, and for outputting said image processed image signal to a video monitor.

39. A film image input system as set forth in Claim 38, wherein said negative/positive decision means comprises density measuring means for measuring the density of other portions of said film than the portion of said image and means for deciding whether said film is a negative film or a positive film in accordance with the magnitude of the density measured by said density measuring means.

40. A film image input system as set forth in Claim 38, wherein said film includes notches or holes each formed in each of frames for indicating the position of the frame, and wherein said negative/positive decision means comprises density measuring means for measuring the density of other

portions of said film than the portion of said image and means, in accordance with the magnitude of the density measured by said density measuring means, for deciding whether said film is a negative film or a positive film and detecting the position of the film.

41. A film image input system as set forth in Claim 38, wherein said film is previously stored in a film cartridge which can be formed in different shapes according to whether said film is a negative film or a positive film, and said negative/positive decision means detects the difference between the shapes of said film cartridge to thereby decide whether said film stored in said film cartridge is a negative film or a positive film.

42. A film image input system, comprising:

a reel motor rotatable at a speed which can be changed according to voltages input therein;

a supply reel and a take-up reel to be driven by said reel motor;

image pickup means for picking up an image on a long and narrow, developed still photo film to be fed between said supply and take-up reels, converting said image into an image signal, and outputting said image signal to a video monitor;

detect means for detecting the film winding diameter of said take-up reel or data corresponding to said film winding diameter; and,

control means having a table or a computational

expression indicating a motor drive voltage with respect to said film winding diameter or the data corresponding to said film winding diameter so as to keep a film feeding speed at a constant speed which is previously set, said control means finding said motor drive voltage from said table or computational expression in accordance with the detect output of said detect means and outputting said motor drive voltage to said reel motor.

43. A film image input system, comprising:

film feeding means for feeding a long and narrow, developed still photo film having standard patterns for correcting faded R, G, B colors printed on other portions thereof than the image pickup portion thereof;

read means for reading said standard patterns printed on said film for correcting the faded colors;

fading decision means for deciding the degrees of fading of the respective R, G, B colors of said film in accordance with said fading correcting standard patterns read by said read means;

a lookup table previously having a plurality of tables for correcting the faded R, G, B colors, said tables respectively corresponding to the degrees of fading of the R, G, B colors, said lookup table reading out the faded R, G, B colors correcting tables corresponding to the results decided by said fading decision means;

image pickup means for picking up images on said film and converting said images into R, G, B image signals;

and,

image signal process means for correcting the R, G, B image signals output from said image pickup means in accordance with the faded R, G, B correcting tables read out from said lookup table and for outputting said corrected image signals to a video monitor.

44. A film image input system, comprising:

film feeding means for feeding a long and narrow still photo film developed;

image pickup means for picking up an image on said film, converting said image into an image signal, and outputting said image signal;

frame detect means for detecting a frame by detecting a notch, a hole or the like formed in each of the frames of said film to indicate the position of said each frame;

operation means for instructing a fast feeding search used to search for a desired frame from said film; and,

control means, when said fast feeding search is instructed by said operation means, for controlling said film feeding means to feed said film fast and, when said detect means detects a frame during said fast feeding, for stopping said film fast feeding temporarily for a given period of time.

45. A film image input system as set forth in Claim

44, wherein said given period of time is a time within the range of 0. 1 sec. to 0. 5 sec. *u*

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